

**Amendments to the Drawings:**

The drawing sheet attached in connection with the above-identified application containing Figure 2 is being presented as a new formal drawing sheet to be substituted for the previously submitted drawing sheet containing Fig. 2. The specific changes which have been made to Figure 2 are increased clarity and visibility of features, and addition of reference number 5 and its corresponding leader line.

**REMARKS**

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

**I. Status of the Claims**

Applicants acknowledge receipt of an Office Action dated March 30, 2010. In this response, claims 1-5, 7, 12-14, 18-19, and 21-23 are amended. Claim 1 is amended, in part, to incorporate features of claims 8, 10, 16 and 17. Accordingly, claims 8-10, 16 and 17 are cancelled. Additional support for the amendment to claim 1 can also be found in, for example, Fig. 5 and its description. Support for the amendments to claims 18-19 and 21-23 can be found, *inter alia*, in the claims as originally filed, the figures and specification. Claims 1-7, 11-15, and 18-26 are pending.

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

**II. Translations of Search or Examination Reports**

The Office states that Applicants have submitted two un-translated search or examination reports from the EPO and JPO. The Office has requested that Applicants “provide a translation of the aforementioned documents, or, if applicants maintain such translations are unavailable, a paraphrase by counsel, in English, of the substance of these two documents so that the examiner can understand what his fellow examiners are doing with corresponding claims in their respective patent offices”.

As stated in the previously filed Information Disclosure Statements submitted Under 37 CFR § 1.56, Applicants submit that each non-English document presented to the Office to date has been provided in compliance with the PTO’s requirements. Additionally, it appears that the Examiner has already considered all previously submitted information disclosure statements and this request is therefore moot.

### **III. Drawing Objections**

The drawings are objected to under 35 CFR 1.83(a) because drawing Figure 2 allegedly fails to show the relevant details of the flow paths for portions 5a and 5b through the heat exchanger as described in the specification.

With this response, Applicant submits replacement Figure 2. Accordingly, Applicant submits that this objection is now moot.

Nonetheless, Fig. 2 shows, among other things, inlets 22, 42, and 61 as well as discharges 24 and 44. Fig. 2 also shows arrows indicating the direction of flow. Fig. 2 also shows flat tubes 29 and throughflow means 49. In combination with the description supplied in the specification, Applicants respectfully submit that one of ordinary skill in the art would understand the relevant details of the flow paths.

For the convenience of the Office, Applicants provide applicable portions of the description of Figure 2 as disclosed in the specification, including certain portions which may assist the Office in understanding the “flow paths for portions 5a and 5b”, as follows:

As illustrated by the arrow P1, **the liquid flows from here to the right in the figure, that is to say toward the throughflow means 49. Within the throughflow means 29, the liquid reverses its flow direction through 180° and flows back into the collecting and distributing means 25 and out of the heating means there via the discharge line 24.** Instead of two separate distributing and/or collecting means 25 and 27, one distributing and/or collecting means can also be provided, although this would then have to be subdivided into two subspaces by a separating means running in the direction b.

**The liquid runs through the throughflow means 49 in a similar way.** The liquid passes via the supply 42 into the collecting and/or distributing means 45 and from there into the throughflow means 49. As indicated by the arrows, there, too, the liquid runs first to the left in the figure, that is to say toward the throughflow means 29.

**Here, too, the liquid is reversed in its flow direction through 180° in the throughflow means 49 and finally passes into the collecting and distributing means 47 (not**

**shown) and from there out of the device via the discharge line 44.**

See specification at page 10, line 29 – page 11, line 17 (emphasis added).

The partitions 23 and 43 prevent the situation where the liquid may be propagated along the entire direction b of the heating means. The **region 5b of the device therefore has a separate supply 61 and discharge (not shown)** for the liquid medium. However, as explained in more detail below, the partition 23 subdivides the distributing and/or collecting means 27 only, but not the collecting and/or distributing means 25, into two part regions.

See specification at page 11, lines 10-18 (emphasis added).

The **refrigerant is conducted via the supply 61 into the distributing and/or collecting means 27**, that is to say into that region of the collecting and distributing space which belongs to the region 5b. It **passes from there via the throughflow means 63 in the direction of the collecting and/or distributing means 45**, once again in **the region 5b of the heating means**. The refrigerant passes from there into the distributing and/or collecting means 47 (not shown), which is arranged parallel downstream of the collecting and/or distributing means 45, and from there via the throughflow means 63 into the distributing and/or collecting and/or distributing means 25. Although, as stated, the separating means 23 separates the distributing and/or collecting means 27 into two subspaces, it does not separate the collecting and/or distributing means 25. Consequently, the liquid can likewise pass into the discharge line 24 and be discharged by this out of the heating means. The discharge line 24 therefore serves for discharging the liquids both out of **the region 5b and out of that part of the region 5a** which is on the left in the figure. The heating means consequently has three different flow regions for the liquid.

See specification at page 11, line 20 – page 12, line 15.

Accordingly, Applicants respectfully submit that one of ordinary skill in the art would understand the relevant details of the flow paths because they are both illustrated in the figures, and supplemented by the descriptions included in the specification. For the reasons discussed above, Applicants request withdrawal of the objection.

**IV. 35 U.S.C. § 112, first paragraph**

Claims 1-26 are rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the enablement requirement. Applicants respectfully traverse this grounds for rejection.

The Office states that “[t]he disclosure of the heat exchanger depicted in Figure 2 is so poor that one of ordinary skill in the art would not know what to construct. It appears that separate liquid streams enter inlets 24 and 42 in Figure 2. Is that correct? It appears that those same liquid streams exit at outlets 24 and 44, respectively. Is that correct? Each of those streams appears to make a ‘U-turn’ (within the tubes) in the vicinity of ‘70’ in Figure 3. Is that correct?” See Office Action at page 3, last paragraph.

This rejection is traversed. At page 10, lines 9-15, the specification provides a description of inlets 24 and 42 as follows:

Reference symbols **22 and 42 relate to supplies** for a liquid into the heating means. This liquid is preferably water from the cooling circuit of the motor vehicle engine. Reference symbols **24 and 44 relate to discharges for said liquid**. The liquid passes via the supplies 22 and 42 into a distributing and/or collecting means 27.

Additionally, as described above, the specification discloses:

As illustrated by the arrow P1, **the liquid flows from here to the right in the figure, that is to say toward the throughflow means 49. Within the throughflow means 29, the liquid reverses its flow direction through 180° and flows back into the collecting and distributing means 25 and out of the heating means there via the discharge line 24.**

See specification at page 10, lines 21-27 (emphasis added).

As described above, the Office characterizes the streams as “appear[ing] to make a U-turn”. Applicants submit that the specification adequately describes applicable features at page 12, line 29 – page 13, line 1 as follows:

What can be achieved in the region 70 between the throughflow means 29 and the throughflow means 49 by suitable material machining is that **the flow direction** of the liquid flowing into the throughflow means 29 and 49 is **reversed**. This **may be achieved**, for example, in that the **throughflow means** is **compressed** in the region 70 shown in fig. 4 and two arcuate reversal regions are thereby obtained. It is **also possible**, however, to **bend the throughflow means** through 180° approximately in its center, in order thereby to achieve a reversal of the flow direction in this region.

The Office also inquires as to the location and functioning of “collecting means 47.” Applicants submit that distributing means is not shown because it is not visible in Figure 2. Additionally, the specification adequately describes collecting means 47, for example in

Here, too, **the liquid** is reversed in its flow direction through 180° in the throughflow means 49 and finally **passes into the collecting and distributing means 47** (not shown) and from there out of the device via the discharge line 44.

See specification at page 11, lines 4-8 (emphasis added).

The refrigerant is conducted via the supply 61 into the distributing and/or collecting means 27, that is to say into that region of the collecting and distributing space which belongs to the region 5b. It passes from there via the throughflow means 63 in the direction of the collecting and/or distributing means 45, once again in the region 5b of the heating means. **The refrigerant passes from there into the distributing and/or collecting means 47 (not shown), which is arranged parallel downstream** of the collecting and/or distributing means 45, and from there via the throughflow means 63 into the distributing and/or collecting and/or distributing means 25. Although, as stated, the separating means 23 separates the distributing and/or collecting means 27 into two subspaces, it does not separate the collecting and/or distributing means 25. Consequently, the liquid can likewise pass into the discharge line 24 and be discharged by this out of the heating means. The discharge line 24 therefore serves for discharging the liquids both out of the region 5b and out of that part of the region 5a which is on the left in the figure. The heating means consequently has three different flow regions for the liquid.

See specification at page 11, line 20 – page 12, line 5.

The Office also states that “[i]t is not understood how region 5b operates. A single inlet 61 is shown for the ‘refrigerant and there doesn’t appear to be any outlet for the ‘refrigerant.’ This is not understood. Conventional heat exchangers have at least one inlet and at least one outlet. Is inlet 61 really connected to a source of ‘refrigerant’ as opposed to engine coolant (like inlets 22 and 42 above)? Where does the ‘refrigerant’ exit and where does it go after that?” (Page 4 of the Office Action)

Applicants submit that region 5b is adequately shown in Fig. 2 and described in the specification to enable the claims. For example, while single inlet 61 is shown, the specification discloses that “the region 5b of the device therefore has **a separate supply 61 and discharge (not shown)** for the liquid medium,” (see page 11, lines 10-15; emphasis added). The specification also discloses that “[t]he discharge line 24 therefore serves for **discharging the liquids both out of the region 5b** and out of that part of the region 5a which is on the left in the figure.” (see page 11, line 38 – page 12, line 5).

Accordingly, one of ordinary skill in the art would understand that region 5b in fact does have at least one discharge/outlet (i.e., “where it go[es] after that”), and additionally that the term “refrigerant” indicates what the medium flowing in region 5b does while the term “liquid” indicates what the medium is.

Additionally, the Office states that “[i]t states in the specification that partition 23 subdivides distributing and/or collecting means 27 only (page 11, lines 10-18, emphasis supplied), but not collecting and/or distributing means 25? [sic] How is this possible? Again a distributing or collecting means 47 is mentioned on page 11, line 28 of the specification that is not shown in any drawing. On page 11, line 36, beginning with the word: ‘Consequently . . .’ applicant describes a flow path from inlet 61 to outlet 24 that the examiner does not understand. Perhaps the quality of drawing Figure 2 is so poor that the examiner cannot see the relevant detail.”

In response, replacement Figure 2 is provided herewith. Applicants submit that the Figure provides all details necessary for one of ordinary skill in the art to understand the

claimed invention. In view of the foregoing, reconsideration and withdrawal of the rejection are respectfully requested.

**V. 35 U.S.C. § 112, second paragraph**

Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as allegedly being indefinite. Applicants respectfully submits that the amendment to the claims render these rejections moot. Reconsideration and withdrawal of the rejection are respectfully requested.

**VI. 35 U.S.C. § 102/§ 103**

Claims 1-7, 10-13, 15-16, 20-26 are rejected under 35 U.S.C. 102(b) as allegedly anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over USP 6,206,092 to Beck (hereafter “Beck”). Applicants respectfully traverse these grounds for rejection.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See generally MPEP § 2131.

The Office has failed to prove that Beck discloses, teaches or suggests that “the heating means has at least two throughflow means for a second medium, at least two of the throughflow means being configured differently from one another; wherein three liquid streams run essentially separately from one another within the heating means; wherein at least one of the throughflow means is bent or curved through an angle of essentially 180°; wherein at least one of the throughflow means has essentially no portion curved in the longitudinal direction; and wherein the throughflow means have a cross section in the manner of a flat tube,” as recited in claim 1.

In contrast, Beck simply discloses a “heater unit 35,” in which “[c]oolant is supplied through liquid valve 60 to an inlet opening 18 in a central tank 19 arranged between two side portions 16, 17. The coolant flows out of the central tank 19 through horizontal tubes in the upper heater core segment 8’ of the side portion 16 to a first end tank 21, and through horizontal tubes 20 in the upper heater core segment 8’ of the side portion 17 to a second end

tank 21.” Accordingly, the Office has failed to prove a *prima facie* case of anticipation with respect to all the features of claims 1-7, 10-13, 15-16, 20-26.

Additionally Beck’s horizontal tubes are not bent or curved at an angle of essentially 180°. Because coolant in Beck’s heat unit enters into central tank 19 at inlet opening, and flows away from tank 19 across side portions to the first and second end tanks via horizontal tubes, there is no reason for Beck to have throughflow means that curve or bend at any angle, much less the 180-degrees recited for the claimed invention.

Accordingly, Beck does not anticipate the claims because Beck fails to disclose all of the features of claim 1. Additionally, one of ordinary skill in the art would have no reason to reconfigure Beck’s heater unit such that its horizontal tubes are curved or bend by any angle.

Applicant submits that claims 2-7, 11-13, and 20-26 ultimately depend from independent claim 1 and that these claims cannot be anticipated for at least the same reasons as claim 1.

As described above, Beck fails to disclose, teach or suggest all of the features of claim 1 from which claims 2-7, 11-13, and 20-26 depend. Thus Beck does not render claims 1 and 2-7, 11-13 and 20-26 to be unpatentable.

For at least these reasons, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejection under § 102 and § 103.

## VII. 35 U.S.C. § 103

Claims 1-5, 7-9, 11, 13, 17-20, 25 and 26 are rejected under 35 U.S.C. 103(a) as obvious over JP 10-119545 (hereafter “JP ‘545””) in view of Beck. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP ‘545 in view of Beck, and further in view of JP 11-6693 (hereafter “JP ‘693”). Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Beck alone or JP‘545 in view of Beck, and further in view of JP 55-51615 (hereafter “JP ‘615”). Applicants respectfully traverse these grounds for rejection.

The Office suggests that Beck alone allegedly renders claim 6 obvious. Applicants respectfully disagree. As discussed above, Beck fails to disclose, teach or suggest all the features of independent claim 1. As also discussed above, there is no reason to modify Beck to incorporate throughflow means that curve by 180°. Simply put, because coolant in Beck's heat unit enters into central tank 19 at inlet opening 18, and flows away from tank 19 across side portions to the first and second end tanks via horizontal tubes, there is no reason for Beck to have throughflow means that curve or bend at any angle, much less the 180-degrees recited for the claimed invention. To do so would cause the very coolant leaving central tank 19 to return to central tank 19, and Beck's heater unit would be inoperable.

The Office also proposes that “[t]o have configured Figure 1 of JP ‘545 with regulating means in ducts 31a, 31b, 31c and 31d as taught by Beck at 44, 45, 46, 50 and 51 would be obvious to one of ordinary skill in the art,” and that “[t]he heating means in JP ‘545 has at least two throughflow means that are configured differently.” See Office Action at page 7. However, the Office has failed to prove that JP ‘545 discloses teaches or suggests “the heating means has at least two throughflow means for a second medium, at least two of the throughflow means being configured differently from one another; wherein three liquid streams run essentially separately from one another within the heating means; wherein at least one of the throughflow means is bent or curved through an angle of essentially 180°; wherein at least one of the throughflow means has essentially no portion curved in the longitudinal direction; and wherein the throughflow means have a cross section in the manner of a flat tube,” as recited in claim 1.

At most, the Office suggests that Figure 1 of JP ‘545 shows “[o]ne throughflow means comes down from the top and other comes up from the bottom.” See Office Action at page 7. However, this falls short of establishing that the heating means has at least two throughflow means for a second medium, at least two of the throughflow means being configured differently from one another; wherein three liquid streams run essentially separately from one another within the heating means; wherein at least one of the throughflow means is bent or curved through an angle of essentially 180°; wherein at least one of the throughflow means has essentially no portion curved in the longitudinal direction; and wherein the throughflow means have a cross section in the manner of a flat tube,” as recited in claim 1.

Applicants submit that the secondary references fail to remedy the deficiencies of JP '545. For example, Beck discloses only a coolant, but does not disclose that its heating unit has at least two throughflow means for a second medium or that three liquid streams run separately from one another within its heating unit. Additionally, the Office has failed to prove that JP '693 and/or JP '615 remedy the deficiencies in JP. For example, the Office has not established that JP '693 and/or JP '615 disclose, teach or suggest that, among other things, "three liquid streams run essentially separately from one another within the heating means," as recited in claim 1.

Because none of the secondary references resolve the fundamental deficiencies in JP '545, Applicants submit that the combination of these references does not properly render independent claim 1 to be obvious. And if an independent claim is nonobvious under § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Applicant submit that claims 2-7, 11-15, and 18-26, each of which ultimately depends from independent claim 1, are also non-obvious at least by virtue of their dependency from claim 1.

Applicants respectfully request reconsideration and withdrawal of the outstanding rejection under § 103.

**CONCLUSION**

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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